

## Claims

1. A method for encoding knowledge, comprising the steps of:
  - forming a network having nodes that represent semantic concepts;
  - associating one or more words with one or more of the nodes;
  - 5 associating multimedia content with one or more of the nodes; and
  - representing relationships between the nodes as arcs between associated words and arcs between associated multimedia content.
2. The method of Claim 1, further comprising:
  - creating lexical relations between semantic concepts on the basis of one or more of: word forms and word meaning of associated words.
3. The method of Claim 1, wherein relationships between semantic concepts and between associated content are based at least in part on audio and/or visual feature descriptor values.
4. The method of Claim 3, further comprising:
  - extracting feature descriptors from multimedia content; and
  - 15 computing similarity measures between descriptor values.
5. The method of Claim 1, wherein the media network knowledge is represented using the ISO MPEG-7 Description Definition Language.





are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

extracting a subset of nodes, relations, and words and/or multimedia content from an encoded media network knowledge representation.

5 13. The method of Claim 12, further comprising:

consolidating together concept nodes, relations, words, and/or multimedia content.

14. A method for updating an encoded media network knowledge representation that comprises a network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

adding, deleting or modifying concepts, relations, or associated words, multimedia content, or descriptors in the encoded media network knowledge representation.

15. A method for querying a multimedia information repository associated with an encoded media network knowledge representation that comprises an encoded network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:

searching the encoded media network knowledge representation;

retrieving words, content, and/or descriptors from the media network knowledge representation; and

searching the information repository using the retrieved words, content, and/or descriptors.

- 5 16. A method for personalizing multimedia information in a system comprising an encoded media network knowledge representation that includes an encoded network having nodes that represent semantic concepts, one or more words and multimedia associated with the one or more nodes, and wherein relationships between the nodes are represented as arcs between associated words and arcs between associated multimedia content, the method comprising the steps of:
- 10 describing the multimedia information using words or descriptors;
- describing user preferences using words, multimedia content, and/or descriptors;
- matching the user preferences with the descriptions of the multimedia information; and
- extracting, retrieving, and/or summarizing the matched multimedia items.
17. A system for encoding knowledge, comprising:
- 15 means for forming a network having logical nodes that represent semantic concepts;
- means for associating one or more words with one or more of the nodes;
- means for associating multimedia content with one or more of the nodes; and
- means for representing relationships between the nodes as arcs between associated words and arcs between associated multimedia content.



